

In re Patent Application of:

SCHRADER

Serial No. **10/807,765**

Filing Date: **March 24, 2004**

REMARKS

Claims 1-17 are cancelled. Claims 18-20 remain in this application. Claims 18-20 have been amended. Claims 21-32 have been added.

Applicant thanks the Examiner for the detailed study of the application and prior art. Applicant submits a Terminal Disclaimer to overcome the double patenting rejection based on U.S. Patent NO. 6,727,452. Applicant also notes the rejection of claims 18-20 as obvious over U.S. Patent No. 3,756,404 to King et al. (hereinafter "King") in view of U.S. Patent No. 5,485,002 to Heck et al. (hereinafter "Heck").

At the outset, claim 18 is a method claim and amended to recite that the food product slurry is received at an advancing mechanism. The method includes forming a substantially planar flow of food product slurry and advancing the food product slurry along a predetermined path of travel into an inspection zone. The food product slurry is imaged at one side of the substantially planar flow at the inspection zone to acquire image data of the food product slurry. This image data is processed to determine the food product defects within the food product slurry. Any food product slurry determined to be defective is rejected.

New dependent method claims and a new set of system claims are added. Independent system claim 26 is of similar scope as independent method claim 18. Added claims include the subject matter of illuminating the food product slurry at a predetermined range of wavelengths to cause defects to fluoresce; conveying food product slurry into the inspection zone by one of conveying along a belt conveyor, discharging through a nozzle, or extruding or pumping through a

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translucent material to allow imaging of the food product slurry; and diverting the defective food product slurry such as by mechanically engaging and diverting the food product slurry away from the path of travel.

As to the rejection over King and Heck, King discloses a slurry, such as applesauce, which is moved in a laminar flow. This slurry is exposed to light through fiber optic tubes 36, which receive the light and illuminate a thin band across the width of the slurry. The light passes through the slurry and impinges upon photo-responsive elements arranged in six groups 38, 40, 42, 44, 46 and 48 as shown in FIG. 1 of King. The photo-responsive elements are preferably photodiodes. The photodiodes each respond to a defect in the portion of the sub-area from which light is received having a light transmittance that differs from the desirable constituents of the slurry. An appropriate signal is transmitted to a gate 50 to apply a signal to a multi-vibrator 52 for producing a pulse. An air solenoid 56 is responsive to the pulse and produces a short blast of air onto that area of moving sheet that includes the defect.

Although King may disclose a laminar flow of slurry, it does not suggest any imaging as in the present claimed invention. King specifically requires the light to be transmitted through the slurry and received within light responsive elements. A change in the amount of light passing through the slurry created by a defect causes a pulse to activate a solenoid. There is no imaging or suggestion of imaging in King.

The present claimed invention, on the other hand, uses imaging technology, and thus, is not limited to light

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passing through a slurry. The camera can be on the other side of the food product slurry from the light as shown in FIGS. 2-5, or on the same side of the food product slurry as the light, such as shown in FIG. 9.

The Examiner combines King with Heck and argues that Heck uses a scanning camera 30 to detect defects in fruit or other three-dimensional objects, such as eggs as indicated in the background section of Heck in column 2, starting at line 9. The Examiner further argues that Heck teaches the use of a scanning camera and associated system to provide more accurate image data to examine defects in citrus fruit. Heck discloses the scanning of a surface of a citrus fruit or other three-dimensional object and classifying the fruit through digital analysis of pixels and then sorting the fruit based upon the peel surface quality.

Heck relies on transmitted, scattered and absorbed light, such that light can be partially absorbed and partially scattered and detected externally using two cameras that capture an image of one of the two hemispheres. Heck uses a CCD scanning camera with complicated optics focused upon mirrors to capture in a single image the entire exterior surface of a fruit hemisphere as shown in FIGS. 1, 2A and 2B. The light is scattered within the fruit to make it glow. Heck uses two halogen projection lamps 22, 24 positioned on opposite sides of the fruit 14 and below the fruit centerline (FIG. 2A).

It is clear that Heck teaches the imaging of a three-dimensional object by imaging all surface areas of the three-dimensional object using a complicated imaging and light system that requires an extensive use of mirrors to give

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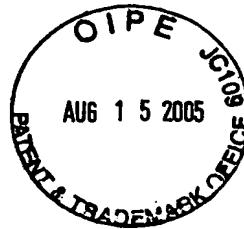
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complete, three-dimensional coverage. Heck is opposite from the present claimed invention where one side of a substantially planar flow of food product slurry is imaged. Thus, Heck teaches away from the present claimed invention and teaches the use of the complicated camera, optics, and mirror system to image an entire surface of a hemispherical or other three-dimensional object, such as an egg.

The combination of King and Heck would suggest imaging a flow of slurry by imaging both sides of the slurry in order to determine the entire surface quality of an object to determine if it is defective. This defeats the entire purpose of the present claimed invention, which is to image the food product slurry across its one surface and acquire image data of the substantially planar flow. The image is processed to determine food product defects, while rejecting any food product slurry determined to be defective. It is not necessary in the present claimed invention to image all sides of a defect as in Heck to determine defects. For example, as noted in some dependent claims, this inspection could be accomplished by illuminating the food product slurry at a predetermined range of wavelengths for highlighting food product defects, and thus, it is not necessary to image an entire surface area as required by Heck, but only one side of the substantially planar flow of food product material.

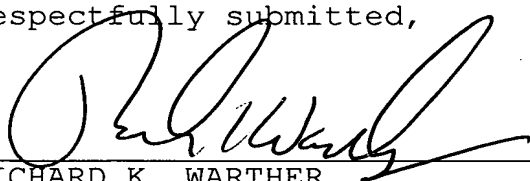
Accordingly, Applicant contends that the present case is in condition for allowance and respectfully requests that the Examiner issue a Notice of Allowance and Issue Fee Due.

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If the Examiner has any questions or suggestions for placing this case in condition for allowance, the undersigned attorney would appreciate a telephone call.

Respectfully submitted,



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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: **MAIL STOP AMENDMENT, COMMISSIONER FOR PATENTS, P.O. BOX 1450, ALEXANDRIA, VA 22313-1450**, on this 11th day of August, 2005.